



Study links asthma, pollutant exposure

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Indoor and outdoor pollutants work together to cause more damage to young lungs than either pollutant could achieve on its own, according to new research from the University of Cincinnati.

Children exposed early in life to high levels of both endotoxin, a common indoor pollutant, and traffic exhaust were six times more likely to develop persistent wheezing by age 3 than children exposed to low levels of the two pollutants.

Persistent wheezing in very young children can be a warning sign for asthma and other lung disorders later in life.

The study is believed to be the first to look at the combined effects of traffic-related pollutants and indoor endotoxins. Endotoxin is a part of bacteria believed to trigger immune response in children.

For the paper, researchers led by Patrick Ryan reviewed data from an ongoing long-term study looking at a group of children deemed at high risk for developing allergies later in life.

"Those first years are a critical time period when children's immune system is still developing," Ryan said. Exposures to different compounds, such as traffic exhaust, can "skew" the body toward developing allergies.

Early exposure to pollutants can have long-term effects on health. The lungs continue to develop until 18 to 20, so pollutants are likely to have more impact on children than on an adult whose lungs have already developed, Ryan said.

He and his colleagues looked at indoor air samples showing endotoxin levels and used a mathematical model to determine how much traffic exhaust the children would have been exposed to anywhere they spent more than eight hours a week from birth to age 3.

They found 36 percent of children who were exposed to high levels of both traffic exhaust and indoor endotoxin showed persistent wheezing by age 3.

Only 11 percent of children exposed to low levels of both substances experienced wheezing.

And 18 percent of children exposed to high levels of traffic exhaust but low levels of endotoxin developed wheezing, researchers found.

Exposure to endotoxin alone appeared to have little effect.

"Traffic-related particles and endotoxin both seem to trigger an inflammatory response in the children monitored in this study. When put together, that effect is amplified to have a greater impact on the body's response," Ryan said.

The findings, released today, will appear in the Dec. 1 edition of the "American Journal of Respiratory and Critical Care Medicine."